

## **WHAT IS CLAIMED IS**

1. A carrier for optical semiconductor device having a device mounting face on which at least one optical semiconductor device is to be mounted and at least one positioning face slanted by a predetermined angle with respect to the device mounting face and disposed below a position at which the optical semiconductor device is mounted.
2. The carrier in accordance with claim 1, wherein at least one electrode, which is to be connected to the optical semiconductor device, is serially formed on the device mounting face and the positioning face.
3. The carrier in accordance with claim 1, wherein at least one convex or concave portion which will be used for positioning the carrier on another substrate is formed on the positioning face.
4. The carrier in accordance with claim 1, wherein the device mounting face corresponds to {110} surface or {100} surface equivalent to (110) surface or (100) surface of a single crystalline silicon and the positioning face corresponds to {111} surface equivalent to (111) surface of the single crystalline silicon.
5. The carrier in accordance with claim 1, wherein two positioning faces are formed symmetrically in a section perpendicular to the device mounting face.
6. A mounting structure of an optical semiconductor device comprising a carrier on which at least one optical semiconductor device is mounted and a substrate on which the carrier with the

optical semiconductor device and another optical device are mounted, wherein

the carrier has a device mounting face on which at least one optical semiconductor device is to be mounted and at least one first positioning face slanted by a first predetermined angle with respect to the device mounting face and disposed below a position at which the optical semiconductor device is mounted; and

the substrate has at least one second positioning face slanted by a second predetermined angle with respect to a top face of the substrate to which the positioning face of the carrier is contacted.

7. The mounting structure in accordance with claim 6, wherein at least one first electrode to which the optical semiconductor device is connected is serially formed on the device mounting face and the first positioning face of the carrier, and at least one second electrode to which the first electrode is contacted is serially formed on the top face and the second positioning face of the substrate.

8. The mounting structure in accordance with claim 6, wherein at least one first convex or concave portion is formed on the first positioning face of the carrier and at least one second concave or convex portion engaged with the first convex or concave portion is formed on the second positioning face of the substrate.

9. The mounting structure in accordance with claim 6, wherein the device mounting face of the carrier corresponds to {110} surface or {100} surface equivalent to (110) surface or (100) surface of a single crystalline silicon, the first positioning face of the carrier

corresponds to {111} surface equivalent to (111) surface of the single crystalline silicon, the top face of the substrate corresponds to {110} surface or {100} surface of a single crystalline silicon, and the second positioning face of the substrate corresponds to {111} surface of the single crystalline silicon.

10. The mounting structure in accordance with claim 6, wherein the device mounting face of the carrier is perpendicular to the top face of the substrate.

*Objetivo* 11. The mounting structure in accordance with claim 6, wherein the substrate has a cavity having a trapezoidal section in which the carrier is mounted, two slanted faces of the cavity serve as the second positioning faces, and the first positioning faces of the carrier are formed symmetrically in a section perpendicular to the device mounting face.

12. An optical module comprising a carrier, a substrate respectively having the above-mentioned configurations, at least one optical semiconductor device mounted on the carrier and at least one optical fiber mounted on the substrate so as to be optically coupled with the optical semiconductor device, wherein

the carrier has a device mounting face on which the optical semiconductor device is to be mounted and at least one first positioning face slanted by a first predetermined angle with respect to the device mounting face and disposed below a position at which the optical semiconductor device is mounted; and

the substrate has at least one second positioning face slanted

by a second predetermined angle with respect to a top face of the substrate to which the positioning face of the carrier is contacted and at least one positioning groove in which the optical fiber is mounted in a manner so that an end face of the optical fiber face a functional face of the optical semiconductor device.

13. The optical module in accordance with claim 12, wherein a light emitting device and a photo sensing device are mounted on the same carrier, and the end face of the optical fiber is slanted for reflecting a part of a light beam emitted from the light emitting device toward the photo sensing device.

14. The optical module in accordance with claim 12, wherein a light emitting device and a photo sensing device are mounted on the same carrier, and a reflection face is formed on the substrate for reflecting a part of a light beam emitted from the light emitting device toward the photo sensing device.

15. The optical module in accordance with claim 12, wherein at least one first electrode to which the optical semiconductor device is connected is serially formed on the device mounting face and the first positioning face of the carrier, and at least one second electrode to which the first electrode is contacted is serially formed on the top face and the second positioning face of the substrate.

16. The optical module in accordance with claim 12, wherein at least one first convex or concave portion is formed on the first positioning face of the carrier and at least one second concave or convex portion engaged with the first convex or concave portion is

formed on the second positioning face of the substrate.

17. The optical module in accordance with claim 12, wherein the device mounting face of the carrier corresponds to {110} surface or {100} surface equivalent to (110) surface or (100) surface of a single crystalline silicon, the first positioning face of the carrier corresponds to {111} surface equivalent to (111) surface of the single crystalline silicon, the top face of the substrate corresponds to {110} surface or {100} surface of a single crystalline silicon, and the second positioning face of the substrate corresponds to {111} surface of the single crystalline silicon.

18. The optical module in accordance with claim 12, wherein the device mounting face of the carrier is perpendicular to the top face of the substrate.

*claimed* 19. The optical module in accordance with claim 12, wherein the substrate has a cavity having a trapezoidal section in which the carrier is mounted, two slanted faces of the cavity serve as the second positioning faces, and the first positioning faces of the carrier are formed symmetrically in a section perpendicular to the device mounting face.